Amendment to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A data transmission apparatus ~~of~~ for transmitting an orthogonal frequency division ~~multiplex~~ multiplexed (OFDM) ~~system~~ signal, in which a null symbol and a synchronous symbol are included, comprising:

a transmitter for transmitting ~~therefrom~~ an OFDM signal; and

a receiver for receiving the OFDM signal,

said receiver including:

an A/D conversion unit, to which said OFDM signal is applied, for converting said OFDM signal to a reception sample value sequence signal;

a null symbol detection unit for detecting a position of said null symbol from said reception sample value sequence signal;

a correlation arithmetic operation unit for carrying out an arithmetic operation of the correlation in order to detect a cross-correlation value between ~~the OFDM~~ said reception sample value sequence signal containing ~~therein~~ at least ~~one of~~ a principle wave and a reflected wave which have been received and a predetermined synchronous symbol signal in a predetermined time window provided in accordance with said position of said null symbol, and obtaining cross-correlation peaks in said principle wave and said reflected wave in a comparison of said cross-

correlation value with a predetermined value;

an interference discrimination unit coupled with said correlation arithmetic operation unit, for detecting which peak is a less inter-symbol interference in said cross-correlation peaks obtained from said principle wave and said reflected wave;

an effective correlation position detection unit for ~~analyzing a cross-correlation value sequence signal from said correlation arithmetic operation unit to detect, out of at least one or more correlation peaks, an effective correlation peak in which the inter-symbol interference becomes minimum; and~~detecting a position of said detected cross-correlation peak from said interference discrimination unit;

~~a circuit device for on the basis of the effective correlation peak thus detected, carrying out the synchronization of a reception sampling clock of said receiver, and the control for the frame timing and the symbol timing thereof.~~a clock generator for generating a sampling clock, said sampling clock being compensated on the bases of the position of said cross-correlation peak from said effective correlation position detection unit, and said compensated sampling clock is applied to said A/D conversion unit; and

a demodulation processing unit for demodulating said reception sample value sequence signal from said A/D conversion unit.

2. (currently amended) A data transmission apparatus according to claim 1, wherein said receiver further includes a control state protection unit ~~for, when the~~

~~effective correlation peak can not be detected in said effective correlation position detection unit, suspending the control in said circuit device to hold the control state right before the suspension~~, which comprises a comparator and a protection value generator for generating a predetermined protection value, said comparator comparing said cross-correlation value with said predetermined protection value, so that the compensation of said sampling clock is suspended on the basis of the compared result between said cross-correlation value and said predetermined protection value.

3. (canceled)

4. (currently amended) A data transmission apparatus according to ~~claim 3~~claim 1, wherein said ~~synchronous control circuitry includes~~clock generator comprising: a frame counter for counting the frame timing with the sampling clock ~~on the transmission side using~~ from the received OFDM signal; a position correction circuit for ~~calculating the frame timing with the sampling clock on the reception side using, as a reference,~~ compensating said sampling clock on the bases of the position of ~~the effective correlation~~ said cross-correlation peak ~~on the time base to output an error between the frame timing thus calculated and the frame timing acquired in said frame counter~~from said effective correlation position detection unit; and a voltage-controlled ~~oscillator~~ oscillator, an oscillation frequency signal of which is controlled by said position correction circuit to generate the sampling clock ~~on the reception side,~~

~~wherein the control is carried out such that the frequency of the reception side sampling clock is synchronized with the frequency of the sampling clock on the transmission side~~.

5. (canceled)

6. (currently amended) A data transmission apparatus according to claim 1, wherein ~~said effective correlation position detection unit detects the effective correlation peak in which the inter-symbol interference becomes minimum on the basis of the relation between the level difference (D/U ratio) between the principle wave and the reflected wave, and the delay time of the reflected wave relative to the principle wave.~~said interference discrimination unit detects one of said cross-correlation peaks obtained from said principle wave and said reflected wave on the bases of a delay time and a correlation peak value level difference between said cross-correlation peaks obtained from said principle wave and said reflected wave.

7. (currently amended) A data transmission apparatus according to claim 1, wherein said receiver further includes an FFT arithmetic operation unit coupled with said A/D conversion unit, and the position of an FFT time window of said FFT arithmetic operation unit is set on the basis of ~~the effective correlation~~ said cross-correlation peak.

8. - 13. (canceled)

14. (currently amended) A receiver for ~~use in a data transmission apparatus of~~ receiving an orthogonal frequency division ~~multiplex~~ multiplexed (OFDM) ~~system, for receiving an OFDM signal~~ signal, in which a null symbol and a synchronous symbol are included, comprising:

an A/D conversion unit, to which said OFDM signal is applied, for converting said OFDM signal to a reception sample value sequence signal;

a null symbol detection unit for detecting a position of said null symbol from said reception sample value sequence signal;

a correlation arithmetic operation unit for carrying out an arithmetic operation of the correlation in order to detect a cross-correlation value between ~~the OFDM~~ said reception sample value sequence signal containing ~~therein~~ at least ~~one of~~ a principle wave and a reflected wave which have been received and a predetermined synchronous symbol signal in a predetermined time window provided in accordance with said position of said null symbol, and obtaining cross-correlation peaks in said principle wave and said reflected wave in a comparison said cross-correlation value with a predetermined value;

an interference discrimination unit coupled with said correlation arithmetic operation unit, for detecting which peak is a less inter-symbol interference in said cross-correlation peaks obtained from said principle wave and said reflected wave;

an effective correlation position detection unit for ~~analyzing a cross-correlation~~

~~value sequence signal from said correlation arithmetic operation unit to detect, out of at least one or more correlation peaks, an effective correlation peak in which the inter-symbol interference becomes minimum; and~~

~~a circuitry for, on the basis of the effective correlation peak thus detected, carrying out the synchronization of a reception sampling clock of said receiver, and the control for the frame timing and the symbol timing thereof.~~detecting a position of said detected cross-correlation peak from said interference discrimination unit;

a clock generator for generating a sampling clock, said sampling clock being compensated on the bases of the position of said cross-correlation peak from said effective correlation position detection unit, and said compensated sampling clock is applied to said A/D conversion unit; and

a demodulation processing unit for demodulating said reception sample value sequence signal from said A/D conversion unit.

15. (currently amended) A ~~data transmission apparatus~~ receiver according to claim 14, further comprising a control state protection unit ~~for, when the effective correlation peak can not be detected in said effective correlation position detection unit, suspending the control in said circuit device to hold the control state right before the suspension.~~, which comprises a comparator and a protection value generator for generating a predetermined protection value, said comparator comparing said cross-correlation value with said predetermined protection value, so that the compensation of said sampling clock is suspended on the basis of the compared result between

said cross-correlation value and said predetermined protection value.

16. (canceled)

17. (currently amended) A ~~data transmission apparatus according to claim 16~~receiver according to claim 14, wherein said ~~synchronous control circuitry includes~~clock generator comprising: a frame counter for counting the frame timing with the sampling clock ~~on the transmission side using~~ from the received OFDM signal; a position correction circuit for ~~calculating the frame timing with the sampling clock on the reception side using, as a reference,~~ compensating said sampling clock on the bases of the position of ~~the effective correlation~~ said cross-correlation peak ~~on the time base to output an error between the frame timing thus calculated and the frame timing acquired in said frame counter~~from said effective correlation position detection unit; and a voltage-controlled ~~oscillator~~ oscillator, an oscillation frequency signal of which is controlled by said position correction circuit to generate the sampling clock ~~on the reception side, wherein the control is carried out such that the frequency of the reception side sampling clock is synchronized with the frequency of the sampling clock on the transmission side~~.

18. (canceled)

19. (currently amended) A ~~data transmission apparatus~~ receiver according to

claim 14, wherein ~~said effective correlation position detection unit detects the effective correlation peak in which the inter-symbol interference becomes minimum on the basis of the relation between the level difference (D/U ratio) between the principle wave and the reflected wave, and the delay time of the reflected wave relative to the principle wave.~~said interference discrimination unit detects one of said cross-correlation peaks obtained from said principle wave and said reflected wave on the bases of a delay time and a correlation peak value level difference between said cross-correlation peaks obtained from said principle wave and said reflected wave.

20. (currently amended) A ~~data transmission apparatus~~ receiver according to claim 14, further comprising an FFT arithmetic operation unit coupled with said an A/D conversion unit, and the position of an FFT time window of said FFT arithmetic operation unit is set on the basis of ~~the effective correlation~~ said cross-correlation peak.

21. -25. (canceled)

26. (currently amended) A reception method ~~of~~ for receiving ~~an OFDM signal for use in a data transmission apparatus of~~ an orthogonal frequency division ~~multiplex~~ multiplexed (OFDM) ~~system~~signal, in which a null symbol and a synchronous symbol are included, comprising the steps of:

converting said OFDM signal to a reception sample value sequence signal in an A/D conversion unit, to which said OFDM signal is applied;

detecting a position of said null symbol from said reception sample value sequence signal in a null symbol detection unit;

carrying out an arithmetic operation of the correlation in order to detect a cross-correlation value between ~~the OFDM~~ said reception sample value sequence signal containing ~~therein~~ at least ~~one of~~ a principle wave and a reflected wave received and a predetermined synchronous symbol signal in a predetermined time window provided in accordance with said position of said null symbol, and obtaining cross-correlation peaks in said principle wave and said reflected wave in a comparison said cross-correlation value with a predetermined value in a correlation arithmetic operation unit;

detecting which peak is a less inter-symbol interference in said cross-correlation peaks obtained from said principle wave and said reflected wave in an interference discrimination unit coupled with said correlation arithmetic operation unit;

~~analyzing a cross-correlation value sequence signal acquired from said correlation arithmetic operation to detect, out of at least one or more correlation peaks, an effective correlation peak in which the inter-symbol interference becomes minimum; and~~

~~on the basis of the effective correlation peak thus detected, carrying out the synchronization of a reception sampling clock of said reception method, and the~~

~~control for the frame timing and the symbol timing thereof.~~detecting a position of said detected cross-correlation peak from said interference discrimination unit in an effective correlation position detection unit;

generating a sampling clock in a clock generator, said sampling clock being compensated on the bases of the position of said cross-correlation peak from said effective correlation position detection unit, and said compensated sampling clock is applied to said A/D conversion unit; and

demodulating said reception sample value sequence signal from said A/D conversion unit in a demodulation processing unit.

27. (currently amended) A reception method according to claim 26, further comprising the ~~step of, when the effective correlation peak can not be detected, suspending the synchronization of the reception sampling clock, and the control for the frame timing and the symbol timing to hold the control state right before the suspension.~~steps of, generating a predetermined protection value, comparing said cross-correlation value with said predetermined protection value, and suspending the compensation of said sampling clock on the basis of the compared result between said cross-correlation value and said predetermined protection value.

28. - 29. (canceled)

30. (currently amended) A reception method according to claim 26, wherein

in said step of ~~detecting the effective correlation peak, an effective correlation peak is detected in which the inter-symbol interference becomes minimum on the basis of the relation between the level difference (D/U ratio) between the principle wave and the reflected wave, and the delay time of the reflected wave (with respect to the principle wave).~~detecting which peak is a less inter-symbol interference includes the step of detecting one of said cross-correlation peaks obtained from said principle wave and said reflected wave on the bases of a delay time and a cross correlation peak value level difference between cross-correlation peaks obtained from said principle wave and said reflected wave.

31. -36. (canceled)